



Hydropower  
Evolutions

## Project Description

### **E.ON International Markets 6 months (2012)**

As part of the “Outside Europe Strategy” and in the context of an asset swap with Verbund, HE’s team (on behalf of E.ON) carried out a commercial, technical, environmental and social due diligence of 19 hydropower plants with a total installed capacity of 2.2 GW.



**Due Diligence | EnerjiSA  
Hydropower Portfolio**  
2,250 MW / 6,300 GWh/a  
Turkey

## Services provided by HE

- Examination of the physical project environment incl. site access, grid connection, topography, geology, seismicity, sedimentation, and hydrology
- Assessment of technical parameters, basis of design, plant layout, and construction design
- In-depth hydraulic modeling, review of generation volumes, and analysis of upstream and downstream developments
- Plausibility checks of authorization & licensing, CAPEX, OPEX, and project scheduling
- Input regarding O&M strategy, dam safety, sustainability performance, operation & engineering concept, construction programs & impounding
- Evaluation of project risks and opportunities incl. environmental issues, social impacts, and the political project environment
- Participation in site visits and expert sessions
- Visualization of findings and recommendations

If you would like learn more about our projects, please contact us and we will connect you with our project managers.

**Hydropower Evolutions GmbH**  
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## Project Description

**E.ON France  
2010-15**

The French Minister for Energy announced a tender process for the renewal of the French hydro concessions. 10 concessions totaling 5,244 MW were expected to be tendered between 2010 and 2015. E.ON France targeted the renewal of French Hydro Concessions as a promising growth option to be further developed.



## Due Diligence | Hydro- power Concessions France

5,244 MW

France

## Services provided by HE

### Preparation Phase

- Support Energy Economics Modeling
- Drive Reserve Market Study (RWTH)
- Support Business Case Development
- Support Partnering + Special Purpose Vehicle (SPV)
- Support Lobbying
- Drive Technical Preparation
- Engage with Engineering Stakeholders
- Prepare for Technical and Environmental Prequalification (PQ) /Due Diligence (DD)

### PQ + Tender Phase

- Support PQ Application
- Mandate Owners Engineer

## Deliverables

- Pre-qualification report
- Preliminary design for value add options
- Energy economic model
- Draft tender documents

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## Project Description

**E.ON SE  
2010-2015**

As part of the “Outside Europe Strategy” HE’s team (on behalf of E.ON) carried out several initial site assessment in the focus countries Brazil, India and Turkey.



## Site Assessments | Various Locations

**Brazil, India and Turkey**

## Services provided by HE

- Examination of the physical project environment incl. site access, grid connection, topography, geology, seismicity, sedimentation, and hydrology
- Assessment of technical parameters, basis of design, plant layout, and construction design
- In-depth hydraulic modeling, review of generation volumes, and analysis of upstream and downstream developments
- Plausibility checks of authorization & licensing, CAPEX, OPEX, and project scheduling
- Input regarding O&M strategy, dam safety, sustainability performance, operation & engineering concept, construction programs & impounding
- Evaluation of project risks and opportunities incl. environmental issues, social impacts, and the political project environment
- Participation in site visits and expert sessions
- Visualization of findings and recommendations
- Risk evaluations
- Energy economic models

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## Project Description

**PT. Titan Multi Power  
6 months (2010)**

On behalf of PT. Titan Multi Power (TMP), HE's team (on behalf of E.ON) carried out a comprehensive review on feasibility level of the hydropower opportunity "Lau Gunung".



## Pre-Feasibility Study | Lau Gunung HPP

14 MW / 108 GWh/a

Indonesia

## Services provided by HE

Review and update of existing project information based on available local studies and in-depth analyses of seismic and geological conditions, hydraulic optimization and plant layout.

## Deliverables

- Review Report of Existing Documents
- Site Investigations
- Topographic and Hydrometric Surveys and Reports
- Pre-Feasibility Report (revision of previous version)
- Recommendation to Investors

## Value created

Both present and future investors of the projects were provided with a comprehensive risks and opportunities evaluation, in particular concerning seismicity. Based on the analytical work and conclusions, the investment proposal was substantiated significantly and eventually led to a very clear decision by the investors.

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## Project Description

**PT. Titan Multi Power  
6 months (2015)**

The project was identified by HE's partner Titan Multi Power (TMP) in 2014. Upon positive results from initial site reconnaissance's, a pre-feasibility study was prepared in the first half of 2015 under HE's lead, revealing a very attractive 220 MW run-of-river hydropower project.



**Pre-Feasibility Study |  
Romuku HPP**  
220 MW / 1,005 GWh/a  
Indonesia

## Services provided by HE

HE's scope included the sole responsibility for the complete study, including overall project management and coordination, contracting and supervision of third party service providers (local consultants, hydrological study), project concept and design, technical and economic analysis and optimization, initial environmental and social impact assessment.

## Deliverables

- Review Potential Study and Existing Documents
- Initial Site Assessment and Report
- Pre-Feasibility Report
- Recommendation to Investors

## Value created

The Pre-Feasibility Study, comprehensively reflecting technical, environmental and social risks and opportunities, enabled the investors to make a fact-based decision to pursue the development of the Romuku hydropower project.

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## Project Description

**International Finance Corporation  
9 months (2015)**

IFC was approached by the Government of Indonesia to conduct a rapid assessment of hydro potential at PU Pera's existing dams. The aim was to identify projects with an estimated hydropower potential of >30 MW. As the result of an international tender HE, together with their Indonesian sub-contractor, was appointed to carry out this assessment.



## Site Assessments | Hydropower Potential of 200+ Dams Indonesia

### Services provided by HE

- Extensive data research and evaluation (plausibility, quality, relevance).
- Development of screening methodology (determination of criteria, weighting for ranking, ranking approach in two phases)
- Formulation of final report including conclusions and recommendations

### Deliverables

- Project Ranking Study
- Project Ranking Matrix containing more than 200 dams
- GHG Evaluation Report for final options
- High-level stakeholder presentation for Government of Indonesia

### Value created

Although existing potentials at dams are already exploited to a large extent, the option for development of a PSP was identified and two initial design concepts were presented by HE. The project is currently pursued for further development by the client together with the national stakeholders.

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## Project Description

**E.ON Climate & Renewables  
2 months (2011)**

In 2011, HE's team (on behalf of E.ON) conducted an in-depth assessment of the Indonesian hydropower potential as a part of E.ON's strategic Southeast Asian deep dive.



## Site Assessments | Hydro Project Inventory and Ranking Study Indonesia

### Services provided by HE

Analysis and evaluation of the technically and commercially feasible hydropower potential in Indonesia, leading to a concrete assessment and ranking of 1,250 sites and identifying the most attractive sites for international investors.

### Deliverables

- Project Inventory and Ranking Study Report
- Indonesian Hydropower Database
- Hydropower Map Indonesia

### Value created

The Indonesian Hydropower Inventory resulted in a structured and systematic ranking which enables E.ON (Uniper) and Hydropower Evolutions, to select projects for development based on consistent information and risk & opportunity profiles of individual sites across Indonesia.

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## Project Description

**PT. Titan Multi Power  
2010-12**

From 2010 to 2012, PT. Titan Multi Power (TMP) and HE's team (on behalf of E.ON) successfully developed the 42 MW Hasang Hydropower Plant on Kualu River in North Sumatra, Indonesia. Based on the results of the Feasibility Study (FS), the project is technically feasible, economically viable and environmentally and socially sustainable.



**Technical Project  
Development | Hasang HPP**  
42 MW / 245 GWh/a  
Indonesia

## Services provided by HE

HE was responsible for the general project management, including project office management, technical and commercial project development, pre-feasibility study, feasibility study, environmental and social impact assessment, environmental and social management and monitoring plan, sustainability report, risk register, EPC contract tender documents, sustainability performance management, technical management of all third party service providers and suppliers required for the completion of the development phase, as well as supporting TMP in local management.

## Deliverables

- Pre-Feasibility Study
- Feasibility Study, ESIA and EPC Tender Documents
- Risk Workshop incl. Risk Register
- Sustainability Workshop

## Value created

Approx. 5 mUSD along with the provision of a solid, fact-based set of technical and sustainability studies allowing the project shareholders to (a) secure key permits and concession rights, (b) spark the interest of key investors and (c) successfully market the project to a third partner for the construction phase.

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